

CORROSION SCIENCE

**TITLE SECTION, LIST OF CONTENTS AND AUTHOR INDEX
VOLUME 34, 1993.**



PERGAMON PRESS *Oxford New York Seoul Tokyo*

CORROSION SCIENCE

An International Journal of the Science and Practice of Corrosion and Protection published under the auspices of the Institute of Corrosion and Centre Belge d'Etude de la Corrosion (CEBELCOR).

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Production Editor (Pergamon): Alison Gibbs. Fax: (0865) 743948.

Publishing and Advertising Offices: Headington Hill Hall, Oxford OX3 0BW, U.K. Tel.: (0865) 794141; Fax: (0865) 60285.

Volume 36 (1994) is published monthly.

Annual Institutional Subscription Rates 1994: North, Central and South America, U.S.\$1230.00, Rest of World £800.00. Associated Personal Subscription Rates are available on request for those whose institutions are library subscribers. Sterling prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice. Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A., and for the remainder of the world to: Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, U.K.

Second class postage paid at RAHWAY, NJ. Postmaster send address corrections to Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

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CONTENTS

NUMBER 1

D. YOU, N. PEBERE and F. DABOSI	1	T. P. Hoar Award
W. QAFAOUL, G. MANKOWSKI and F. DABOSI	5	An investigation of the corrosion of pure iron by electrochemical techniques and <i>in situ</i> observations
E. AKIYAMA, H. YOSHIOKA, J. H. KIM, H. HABAZAKI, A. KAWASHIMA, K. ASAMI and K. HASHIMOTO	17	The pitting corrosion of pure and low alloyed copper in chloride-containing borate buffered solutions
M. W. KENDIG, A. J. DAVENPORT and H. S. ISAACS	27	The effect of magnesium on the corrosion behavior of sputter-deposited amorphous Al-Mg-Ti ternary alloys in a neutral chloride solution
R. S. DUTTA, P. K. DE and H. S. GADIYAR	41	The mechanism of corrosion inhibition by chromate conversion coatings from X-ray absorption near edge spectroscopy (XANES)
H. HUANG and W. J. D. SHAW	51	The sensitization and stress corrosion cracking of nitrogen-containing stainless steels
G. S. DUFFÓ and J. R. GALVELE	61	Cold work effects on sulfide stress cracking of pipeline steel exposed to sour environments
J. R. BUCKLEY and D. HARDIE	79	The surface mobility-stress corrosion cracking mechanism: Ag-15Pd alloy in Na ₂ PO ₄ , Na ₂ P ₂ O ₇ and NaOH solutions
C. V. D'ALKAINE, L. M. M. DE SOUZA and F. C. NART	93	The effect of pre-straining and δ -ferrite on the embrittlement of 304L stainless steel by hydrogen
C. V. D'ALKAINE, L. M. M. DE SOUZA and F. C. NART	109	The anodic behaviour of niobium—I. The state of the art
C. V. D'ALKAINE, L. M. M. DE SOUZA and F. C. NART	117	The anodic behaviour of niobium—II. General experimental electrochemical aspects
C. V. D'ALKAINE, L. M. M. DE SOUZA and F. C. NART	129	The anodic behaviour of niobium—III. Kinetics of anodic film growth by potentiodynamic and galvanostatic techniques—general models, equations and their applications
A. E. BOHÉ, J. R. VILCHE and A. J. ARVIA	151	The voltammetric behaviour of nickel in sodium hydroxide-sodium sulphide solutions
J. N. AL-HAJJI and M. R. REDA	163	The corrosion of copper-nickel alloys in sulfide-polluted seawater: the effect of sulfide concentration
<i>Book Review</i>	179	Corrosion Atlas. E. D. D. DURING
J. C. SCULLY	181	Corrosion Diary

NUMBER 2

H. HABAZAKI, J. DABEK, K. HASHIMOTO, S. MROWEC and M. DANIELEWSKI	183	The sulphidation and oxidation behaviour of sputter-deposited amorphous Al-Mo alloys at high temperatures
B.-P. ZHANG, H. HABAZAKI, A. KAWASHIMA, K. ASAMI and K. HASHIMOTO	201	The corrosion behavior of melt-spun Cr-Ni-20P alloys in concentrated hydrochloric and hydrofluoric acids
J. A. CAREW and A. ABDULLAH	217	The influence of heat treatment on the corrosion behaviour of ferritic stainless steel solar panels in hot municipal water
A. ASKEY, S. B. LYON, G. E. THOMPSON, J. B. JOHNSON, G. C. WOOD, M. COOKE and P. SAGE	233	The corrosion of iron and zinc by atmospheric hydrogen chloride
A. A. WRONKOWSKA and A. WRONKOWSKI	249	The corrosion behaviour of Ag-Sn alloys investigated by ellipsometry
A. TAMADA and Y. TAMURA	261	The electrochemical characteristics of aluminum galvanic anodes in an Arctic seawater

D. VOUGNER, A. M. DE BEDELIEVRE, M. KEDDAM and J. M. MACKOWSKI	279	The electrochemical behaviour in acidic and chloride solutions of amorphous hydrogenated carbon thin films deposited on single crystal germanium slices (n-type) by plasma decomposition of methane
P. L. CROUSE	295	The kinetics of the reaction between an iron surface and the vapour of aqueous hydrogen fluoride
J. C. NELSON and R. A. ORIANI	307	Stress generation during anodic oxidation of titanium and aluminum
C. B. BRESLIN and W. M. CARROLL	327	The activation of aluminium by indium ions in chloride, bromide and iodide solutions
S. N. RAICHEVA, B. V. ALEKSIEV and E. I. SOKOLOVA	343	The effect of the chemical structure of some nitrogen- and sulphur-containing organic compounds on their corrosion inhibiting action
	351	Announcements
	355	Corrosion Diary
 NUMBER 3		
J. C. SCULLY	357	Obituary: DR L. L. SHREIR
	359	U. R. Evans Award 1992
M. THIEME and D. SCHARNWEBER	363	The hydrothermal chromate treatment of carbon steel. The electrochemical and surface analytical characterisation of protecting oxide layers
M. THIEME, D. SCHARNWEBER and T. STEPHAN	383	Transformations of titanium carbide precipitations under hydrothermal conditions
M. SAKAKIBARA, N. SAITO, H. NISHIHARA and K. ARAMAKI	391	Corrosion of iron in anhydrous methanol
S. FELIU, M. MORCILLO and S. FELIU, JR	403	The prediction of atmospheric corrosion from meteorological and pollution parameters—I. Annual corrosion
S. FELIU, M. MORCILLO and S. FELIU, JR	415	The prediction of atmospheric corrosion from meteorological and pollution parameters—II. Long-term forecasts
U. HOFMANN and K. G. WEIL	423	On the oxidation of nickel/phosphorus alloys
M. H. WILDE and B. E. WILDE	433	Some observations on the mechanism of corrosion to be encountered in nuclear waste repositories located in tuffaceous rock
K. ASAMI, H. HABAZAKI, K. KAWASHIMA and K. HASHIMOTO	445	On the unusual morphology of pitting corrosion of amorphous Ni-Zr alloys
N. XU, G. E. THOMPSON, J. L. DAWSON and G. C. WOOD	461	The interaction of chromate species with aluminium supporting anodic films—I. Electronoptical studies
N. XU, G. E. THOMPSON, J. L. DAWSON and G. C. WOOD	479	The interaction of chromate species with aluminium supporting air-formed and anodic films—II. Impedance studies
S. J. HANEEF, J. B. JOHNSON, G. E. THOMPSON and G. C. WOOD	497	The degradation of coupled stones by wet deposition processes
S. J. HANEEF, J. B. JOHNSON, M. JONES G. E. THOMPSON, G. C. WOOD and S. A. AZZAZ	511	A laboratory simulation of degradation of Leinster granite by dry and wet deposition processes
<i>Comments</i> H. S. ISAACS	525	Comments on "A stochastic analysis of potential fluctuations during passive film breakdown and repair of iron" by M. HASHIMOTO, S. MIYAJIMA and T. MURATA
	529	Corrosion Diary

NUMBER 4

- M. J. JUSTO and M. G. S. FERREIRA 531
 M. W. BRUMM and H. J. GRABKE 547
 N. C. SUBRAMANYAM, B. S. SHESHADRI and S. M. MAYANNA 563
 S. BHATTACHARJEE, N. ROY, A. K. DEY and M. K. BANERJEE 573
 G. ROCCHINI 583
 B.-P. ZHANG, H. HABAZAKI, A. KAWASHIMA, K. ASAMI and K. HASHIMOTO 599
 A. GIL, H. HOVEN, E. WALLURA and W. J. QUADAKKERS 615
 M. J. BOZACK and R. D. BESHEARS 631
 L. H. HIHARA and R. M. LATANISION 655
 M. A. BAKER and J. E. CASTLE 667
 H. KAISER 683
Short Communications
 K. SHIMIZU, K. KOBAYASHI, G. E. THOMPSON and G. C. WOOD 701
 R. B. INTURI and Z. SZKLARSKA-SMIALOWSKA 705
Book Reviews
 P. KNOTT 711
 J. R. ATKINSON 712
 715 Announcement
 717 Corrigendum
 719 Corrosion Diary
- New Member of the Editorial Board
 The corrosion of zinc in simulated SO₂-containing indoor atmospheres
 Oxidation behaviour of NiAl—II. Cavity formation beneath the oxide scale on NiAl of different stoichiometries
 Thiourea and substituted thioureas as corrosion inhibitors for aluminium in sodium nitrite solution
 Statistical appraisal of the atmospheric corrosion of mild steel
 The determination of electrochemical parameters by the NOLI1 method
 The corrosion behavior of Cr-P alloys in hydrofluoric acid
 The effect of microstructure on the oxidation behaviour of TiAl-based intermetallics
 The effects of exposure temperature on 2219 Al-Cu alloy surfaces immersed in natural seawater
 Suppressing galvanic corrosion in graphite/aluminum metal-matrix composites
 The initiation of pitting corrosion at MnS inclusions
 Selective dissolution of high and low diffusivity alloys—a comparison of kinetical and micromorphological aspects
 Contribution to the paper on "Evolution of the corrosion potential of repassivating aluminium surfaces" by G. T. BURSTEIN and R. J. CINDEREVY
 Dependence of the pitting potential of Al alloys on solubility of alloying element oxides
 Corrosion of Glass, Ceramics and Ceramic Superconductors. Principles, Testing, Characterisation and Applications. Eds D. E. CLARK and B. K. ZOITIS
 Concise Encyclopedia of Polymer Processing & Applications, Ed. P. J. CORISH

NUMBER 5

- J.-E. SVENSSON and L.-G. JOHANSSON 721
 MING-CHANG TSAI, WEN-TA TSAI and JU-TUNG LEE 741
 N. G. SMART, M. GAMBOA-ALDECO and J. O'M. BOCKRIS 759
 B. E. EL-ANADOULI 779
 G. BECH-NIELSEN and A. D. JUHL 785
 PH. REFAIT and J.-M. R. GÉNIN 797
 A. C. HOLLIS and J. C. SCULLY 821
 A. C. HOLLIS and J. C. SCULLY 837
 I. M. NOTTER and D. R. GABE 851
- A laboratory study of the initial stages of the atmospheric corrosion of zinc in the presence of NaCl; influence of SO₂ and NO₂
 The effect of heat treatment and applied potential on the stress corrosion cracking of Alloy 600 in thiosulfate solution
 Corrosion mechanisms of iron in concentrated acidic zinc chloride media
 The evidence for the competitive adsorption of inhibitors
 Corrosion measurements by titration (CMT): copper, Sn-Zn alloy and aluminium
 The oxidation of ferrous hydroxide in chloride-containing aqueous media and Pourbaix diagrams of green rust one
 The stress corrosion cracking and hydrogen embrittlement of titanium in methanol-hydrochloric acid solutions
 The stress corrosion cracking and hydrogen embrittlement of titanium in methanol-iodine solutions
 Polarisation resistance methods for measurement of the porosity of thin metal coatings

D. R. LENARD and J. G. MOORES	871	The effects of vapor phase corrosion inhibitors on the galvanic corrosion of aluminum
	881	Corrosion Diary

NUMBER 6

J. C. SCULLY	883	Obituary: EARL A. GULBRANSEN
G. ROCCHINI	885	A numerical method for the evaluation of the corrosion rate of a metal
E. P. SIMONEN, R. H. JONES and M. J. DANIELSON	899	Predicted salt film formation effects on stage I stress corrosion cracking of anodically polarized nickel
MING TINGJIANG and XU NAIXIN	915	The galvanostatic potential oscillations of mild steel in 93% sulfuric acid
A. TURNBULL	921	Modelling of environment assisted cracking
M. C. ALONSO, R. P. M. PROCTER, C. ANDRADE and M. SÁENZ DE SANTA-MARÍA	961	Susceptibility to stress corrosion cracking of a prestressing steel in NaHCO ₃ solutions
J. H. KIM, E. AKIYAMA, H. YOSHIOKA, H. HABAZAKI, A. KAWASHIMA, K. ASAMI and K. HASHIMOTO	975	The corrosion behavior of sputter-deposited amorphous titanium-chromium alloys in 1 M and 6 M HCl solutions
A. M. BECCARIA, G. POGGI, M. ARFELLI and G. MATTOGNO	989	The effect of salt concentration on nickel corrosion behaviour in slightly alkaline solutions at different hydrostatic pressures
L. MARAHUSIN, S. KOKOT and D. P. SCHWEINSBERG	1007	The electrogeneration of oxygen at copper and iron electrodes and its interaction with cotton fabric
A. W. HARRIS, J. S. BROWN and A. ATKINSON	1017	The re-oxidation of pre-formed nickel oxide scales
<i>Short Communication</i>		
G. HULTQUIST, L. GRÄSJO and Q. LU	1035	Consumption and release of gas components during the reaction of iron at 300°C in a H ₂ ¹⁸ O/H ₂ ¹⁶ O/O ₂ gas mixture
<i>Book Review</i>		
J. C. SCULLY	1039	DECHEMA Corrosion Handbook, Volume 10, Carboxylic Acid Esters, Drinking Water and Nitric Acid. Ed. D. BEHRENS
	1043	Corrosion Diary

NUMBER 7

G. M. BROWN, K. SHIMIZU, K. KOBAYASHI, G. E. THOMPSON and G. C. WOOD	1045	The growth of chromate conversion coatings on high purity aluminium
A. ASKEY, S. B. LYON, G. E. THOMPSON, J. B. JOHNSON, G. C. WOOD, P. W. SAGE and M. J. COOKE	1055	The effect of fly-ash particulates on the atmospheric corrosion of zinc and mild steel
P. ERIKSSON, L.-G. JOHANSSON and J. GULLMAN	1083	A laboratory study of corrosion reactions on statue bronze
C. B. BRESLIN and W. M. CARROLL	1099	The effects of indium precipitates on the electrochemical dissolution of Al-In alloys
T. SUTER, E. M. MOSER and H. BÖHNI	1111	The characterization of the tarnishing of Cu-15Ni-8Sn and Cu-5Al-5Sn alloys
P. MARCUS and J.-M. HERBELIN	1123	The entry of chloride ions into passive films on nickel studied by spectroscopic (ESCA) and nuclear (³⁶ Cl radio-tracer) methods
A. PIRNÁT, L. MÉSZÁROS, G. MÉSZÁROS and B. LENGYEL	1147	A measuring method and instrument for the evaluation of corrosion resistance of chromate layers

Y. SHIDA, H. FUJIKAWA and Y. SAWARAGI	1157	The oxidation and carbon transfer behaviour of Ni-27Cr-5Mo-5W based alloys in an impure helium atmosphere at high temperature
MAO-YING TENG and JUAN-JOU YANG	1173	The electrochemical evaluation and surface analysis of materials in <i>para</i> -toluene sulphonic acids
M. TOUZET, M. CID, M. PUIGGALI and M. C. PETIT	1187	An EIS study and Auger analysis on 304L stainless steel in hot chloride media before and after a sample straining
	1197	Announcement
	1199	Corrosion Diary

NUMBER 8

R. B. INTURI and Z. SZKLARSKA-SMIALOWSKA	1201	Structure, composition and pitting behavior of sputtered Al, Al-Cr and Al-Ta films
I. ODNEVALL and C. LEYGRAF	1213	Formation of $\text{NaZn}_2\text{Cl}(\text{OH})_6\text{SO}_4 \cdot 6\text{H}_2\text{O}$ in a marine atmosphere
I. ODNEVALL and M. WESTDAHL	1231	Zinc chlorohydroxosulfates: newly-discovered corrosion products on zinc. Structure determination of $\text{NaZn}_2\text{Cl}(\text{OH})_6\text{SO}_4 \cdot 6\text{H}_2\text{O}$ and X-ray study of $\text{Zn}_2\text{Cl}_2(\text{OH})_2\text{SO}_4 \cdot 5\text{H}_2\text{O}$
W. KINDLEIN, JR, P. T. SCHILLING, R. M. SCHROEDER and I. L. MÜLLER	1243	The characterization of the sulphide stress-corrosion susceptibility of high-strength low-alloy steels in standardized solutions
R. D. BRAUN, E. E. LOPEZ and D. P. VOLLMER	1251	Low molecular weight straight-chain amines as corrosion inhibitors
C. COMPÈRE, É. FRÉCHETTE and E. GHALI	1259	The corrosion evaluation of painted and artificially damaged painted steel panels by AC impedance measurements
R. K. SINGH RAMAN and J. B. GNANAMOORTHY	1275	The oxidation behaviour of the weld metal, heat affected zone and base metal in the weldments of 2.25Cr-1Mo steel
V. OTIENO-ALEGO, G. A. HOPE, H. J. FLITT and D. P. SCHWEINSBERG	1289	The effect of hydroquinone and methoxypropylamine on the pitting corrosion behaviour of A-470 low alloy turbine disc steel
J. H. GERRETSEN and A. VISSER	1299	Inhibitor performance under liquid droplet impingement conditions in CO_2 -containing environment
G. L. MAKAR, J. KRUGER and K. SIERADZKI	1311	Stress corrosion cracking of rapidly solidified magnesium-aluminum alloys
P. Q. ZHANG, J. X. WU, W. Q. ZHANG, X. Y. LU and K. WANG	1343	A pitting mechanism for passive 304 stainless steel in sulphuric acid media containing chloride ions
S. NASRAZADANI and A. RAMAN	1355	The application of infrared spectroscopy to the study of rust systems—II. Study of cation deficiency in magnetite (Fe_3O_4) produced during its transformation to maghemite ($\gamma\text{-Fe}_2\text{O}_3$) and hematite ($\alpha\text{-Fe}_2\text{O}_3$)
P. S. JOSHI, G. VENKATESWARAN and K. S. VENKATESWARLU	1367	Passivation of carbon steel alloy in de-oxygenated alkaline pH media. The effect of various additives
	1381	Announcements
	1383	Corrosion Diary

NUMBER 9

S. RAMAMURTHY and A. ATRENS	1385	The stress corrosion cracking of as-quenched 4340 and 3.5NiCrMoV steels under stress rate control in distilled water at 90°C
MING-QI LI, ZHEN-WEI WEI, FU-SHENG ZHANG and JIE-QING TANG	1403	The corrosion fatigue of medium strength structural steels
G. L. BIANCHI and J. R. GALVELE	1411	Stress corrosion cracking of pure copper and pure silver in gaseous environments

E. GULBRANDSEN, J. TAFTØ and A. OLSEN	1423	The passive behaviour of Mg in alkaline fluoride solutions. Electrochemical and electron microscopical investigations
K. TANNO, M. ITOH, T. TAKAHASHI, H. YASHIRO and N. KUMAGAI	1441	The corrosion of carbon steel in lithium bromide solution at moderate temperatures
K. TANNO, M. ITOH, H. SEKIYA, H. YASHIRO and N. KUMAGAI	1453	The corrosion inhibition of carbon steel in lithium bromide solution by hydroxide and molybdate at moderate temperatures
R. NISHIMURA	1463	The effect of potential on stress corrosion cracking of type 316 and type 310 austenitic stainless steels
K. SHIMIZU, K. KOBAYASHI, G. E. THOMPSON and G. C. WOOD	1475	A novel technique for ready determination of cathodic activity of intermetallic compounds during corrosion of aluminium
M. FAVRE and D. LANDOLT	1481	The influence of gallic acid on the reduction of rust on painted steel surfaces
W. M. CARROLL, M. MURPHY and C. B. BRESLIN	1495	The corrosion/dissolution behaviour of aluminium in solutions containing both chloride and fluoride ions
E. P. M. VAN WESTING, G. M. FERRARI and J. H. W. DE WIT	1511	The determination of coating performance with impedance measurements—I. Coating polymer properties
J. MORALES, P. ESPARZA, S. GONZÁLEZ, R. SALVAREZZA and M. P. ARÉVALO	1531	The role of <i>Pseudomonas aeruginosa</i> on the localized corrosion of 304 stainless steel
T. A. CRABB, P. N. GIBSON and E. McALPINE	1541	A study of the effects of yttrium additions on the initial stages of oxidation of Ni–20Cr using glancing angle X-ray techniques
<i>Short Communications</i>		
A. J. BETTS and R. C. NEWMAN	1551	The effect of alloyed molybdenum on the activation of anodic dissolution by reduced sulphur compounds
M. THIEME	1557	Characterisation of oxide layers formed by hydrothermal chromate treatment (HTCT) on Incoloy- and Inconel-type alloys
	1561	Announcement
	1563	Corrosion Diary
 NUMBER 10		
J. C. SCULLY	1565	Obituary: PROFESSOR H. H. UHLIG
C. DESLOUIS, M. C. LAFONT, N. PEBERE and D. YOU	1567	Corrosion inhibition of pure iron in neutral solutions by electrochemical techniques
E. OTERO and J. J. ROYUELA	1581	The assessment of short term data of pipe corrosion in drinking water—I. Galvanized steel
J. J. ROYUELA and E. OTERO	1595	The assessment of short term data of pipe corrosion in drinking water—II. Copper
ZILONG TANG and SHIZHE SONG	1607	The potentiostatic–galvanostatic transient response character of a passive system with adsorption
E. OTERO, A. PARDO, M. LAGUNA and F. J. PÉREZ	1617	The influence of the mixing procedure and the copper proportion on the corrosion resistance of Fe–Cu sintered products in SO ₂ contaminated atmospheres
K. HOFFMANN and M. STRATMANN	1625	The delamination of organic coatings from rusty steel substrates
WEN-TA TSAI, B. REYNDERS, M. STRATMANN and H. J. GRABKE	1647	The effect of applied potential on the stress corrosion cracking behavior of high nitrogen steels
A. LENG and M. STRATMANN	1657	The inhibition of the atmospheric corrosion of iron by vapour-phase inhibitors
Y. MASSIANI, J. P. CROUSIER and A. LAZZERI	1685	Studies of the corrosion protection of immersed metallic structures by sub-aquatic applications of epoxy coatings
YU ZUO and R. M. LATANISION	1697	The pitting corrosion of amorphous Ni ₄₀ Cr _{12.5} Fe ₃ Si ₄ B _{12.5} alloy in chloride solution
K. H. W. SEAH, K. B. LIM, C. H. CHEW and S. H. TEOH	1707	The correlation of acoustic emission with rate of corrosion

Q. LE XUAN, J. KRAIEM and K. VU QUANG	1715	New aspects of the galvanokinetic polarization technique for pitting corrosion studies
V. B. SINGH and S. M. A. HOSSEINI	1723	The electrochemical and corrosion behaviour of titanium and its alloy (VT-9) in phosphoric acid
I. B. SINGH and U. SEN	1733	The effect of NaCl addition on the corrosion of mild steel in NaNO ₃ melt
<i>Short Communication</i>		
D. J. SIMBI and J. C. SCULLY	1743	The intergranular stress corrosion cracking of Ti 155 in methanol/HCl at room temperature
<i>Discussion</i>		
A. TURNBULL	1751	Anodic iron oxide films and their effect on the hydrogen permeation through steel, by P. BRUZZONI and R. GARAVAGLIA
<i>Book Review</i>		
J. C. SCULLY	1753	DECHEMA Corrosion Handbook, Volume 11, Chlorine Dioxide and Seawater. Ed. D. BEHRENS
	1757	Announcement
	1759	Corrosion Diary

NUMBER 11

L. H. HIHARA and P. K. KONDEFUDI	1761	The galvanic corrosion of SiC monofilament/ZE41 Mg metal-matrix composite in 0.5 M NaNO ₃
Y. C. LU and M. B. IVES	1773	The improvement of the localized corrosion resistance of stainless steel by cerium
S. TEBBAL and N. HACKERMAN	1787	Liquid film thickness and weak acids in the CO ₂ pitting of steel
A. SCHÜSSLER and H. E. EXNER	1793	The corrosion of nickel-aluminium bronzes in seawater—I. Protective layer formation and the passivation mechanism
A. SCHÜSSLER and H. E. EXNER	1803	The corrosion of nickel-aluminium bronzes in seawater—II. The corrosion mechanism in the presence of sulphide pollution
J. H. KIM, E. AKIYAMA, H. HABAZAKI, A. KAWASHIMA, K. ASAMI and K. HASHIMOTO	1817	The corrosion behavior of sputter-deposited amorphous chromium-zirconium alloys in 6 M HCl solution
B.-M. IM, E. AKIYAMA, H. HABAZAKI, A. KAWASHIMA, K. ASAMI and K. HASHIMOTO	1829	Electrochemical and XPS studies of the effects of alloying elements on the corrosion behavior of amorphous Fe-Cr-metalloid alloys in 9 M H ₂ SO ₄
K. H. W. SEAH and X. CHEN	1841	A comparison between the corrosion characteristics of 316 stainless steel, solid titanium and porous titanium
K. SHIMIZU, G. M. BROWN, K. KOBAYASHI, G. E. THOMPSON and G. C. WOOD	1853	The role of electron tunnelling in the development of chemical conversion coatings on high purity aluminium
R. NISHIMURA	1859	The effect of chloride ions on stress corrosion cracking of type 304 and type 316 austenitic stainless steels in sulfuric acid solution
W. C. MCKEAN and R. D. BRAUN	1869	Chromatographic and iron carbonate dissolution methods for evaluating active ingredients in corrosion inhibitors
A. J. HUTCHINSON, J. B. JOHNSON, G. E. THOMPSON, G. C. WOOD, P. W. SAGE and M. J. COOKE	1881	Stone degradation due to wet deposition of pollutants
J. N. ALHAJJI and M. R. REDA	1899	The effect of alloying elements on the electrochemical corrosion of low residual carbon steels in stagnant CO ₂ -saturated brine
C. LEMAITRE, A. ABDEL MONEIM, R. DJOUDJOU, B. BAROUX and G. BERANGER	1913	A statistical study of the role of molybdenum in the pitting resistance of stainless steels

B. BOELEN, B. SCHMITZ,
J. DEFURNY and F. BLEKKENHORST

Book Review

J. C. SCULLY

- 1923 A literature survey on the development of an accelerated laboratory test method for atmospheric corrosion of pre-coated steel products
- 1933 Encyclopedia of Materials Science and Engineering, Supplementary Volume 3. Ed. R. W. CAHN
- 1935 Corrosion Diary

M. SAKAKIBARA, H. NISHIHARA
and K. ARAMAKI
J. H. KIM, E. AKIYAMA,
H. HABAZAKI, A. KAWASHIMA,
K. ASAMI and K. HASHIMOTO
X. G. ZHANG and E. M. VALERIOTE

R. B. INTURI and Z. SZKLARSKA-
SMIALOWSKA
E. C. COONEY and D. I. POTTER

E. C. COONEY and D. I. POTTER*

G. ROCCHINI

G. ROCCHINI

F. MANSFELD, S. H. LIN and
L. KWIATKOWSKI
PH. REFAIT and J.-M. R. GÉNIN

J. S. CHEN, M. SALMERON
and T. M. DEVINE
Short Communications

G. M. BROWN, K. SHIMIZU,
K. KOBAYASHI, G. E. THOMPSON
and G. C. WOOD

F. MANSFELD and
J. C. S. FERNANDES
Discussion

P. BRUZZONI

NUMBER 12

- 1937 The effects of complexing agents on the corrosion of iron in an anhydrous methanol solution
- 1947 The corrosion behavior of sputter-deposited amorphous Cr-Nb and Cr-Ta alloys in 12 M HCl solution
- 1957 Galvanic protection of steel and galvanic corrosion of zinc under thin layer electrolytes
- 1973 The pitting corrosion of sputtered Fe base alloy films
- 1991 Microstructural and corrosive interactions in phosphorus ion implanted 304L stainless steel—I. Alterations in microstructure by implantation
- 2007 Microstructural and corrosive interactions in phosphorus ion implanted 304L stainless steel—II. Alterations in corrosion resistance by implantation
- 2019 The influence of the ohmic drop on the shape of polarization curves
- 2031 Corrosion rate monitoring by the linear polarization method
- 2045 The effects of process parameters on alternating voltage (AV) passivation of 304 stainless steel
- 2059 The oxidation of Ni(II)-Fe(II) hydroxides in chloride-containing aqueous media
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- 2099 Further evidence for the presence of residual flaws in a thin oxide layer covering high purity aluminium
- 2105 Impedance spectra for aluminum 7075 during the early stages of immersion in sodium chloride
- 2109 Anodic iron oxide films and their effect on the hydrogen permeation through steel, by P. BRUZZONI and R. GARAVAGLIA
- 2111 Announcements
- 2115 Corrosion Diary
- i Index to Vol. 34

AUTHOR INDEX

- Abdel Moneim, A. 1913
 Abdullah, A. 217
 Akiyama, E. 27, 975, 1817, 1829, 1947
 Al-Hajji, J. N. 163
 Aleksiev, B. V. 343
 Alhajji, J. N. 1899
 Alonso, M. C. 961
 Andrade, C. 961
 Aramaki, K. 391, 1937
 Arévalo, M. P. 1531
 Arfelli, M. 989
 Arvia, A. J. 151
 Asami, K. 27, 201, 445, 599, 975, 1817, 1829, 1947
 Askey, A. 233, 1055
 Atkinson, A. 1017
 Atkinson, J. R. 712
 Atrens, A. 1385
 Azzaz, S. A. 511

 Baker, M. A. 667
 Banerjee, M. K. 573
 Baroux, B. 1913
 Beccaria, A. M. 989
 Bech-Nielsen, G. 785
 Beranger, G. 1913
 Beshears, R. D. 631
 Betts, A. J. 1551
 Bhattacharjee, S. 573
 Bianchi, G. L. 1411
 Blekkenhorst, F. 1923
 Bockris, J. O'M. 759
 Boelen, B. 1923
 Bohé, A. E. 151
 Böhni, H. 1111
 Bozack, M. J. 631
 Braun, R. D. 1251, 1869
 Breslin, C. B. 327, 1099, 1495
 Brown, G. M. 1045, 1853, 2099
 Brown, J. S. 1017
 Brumm, M. W. 547
 Bruzzoni, P. 2109
 Buckley, J. R. 93

 Carew, J. A. 217
 Carroll, W. M. 327, 1099, 1495
 Castle, J. E. 667
 Chen, J. S. 2071
 Chen, X. 1841
 Chew, C. H. 1707
 Cid, M. 1187
 Compère, C. 1259
 Cooke, M. 233
 Cooke, M. J. 1055, 1881
 Cooney, E. C. 1991, 2007
 Crabb, T. A. 1541

 Crouse, P. L. 295
 Crousier, J. P. 1685

 D'Alkaine, C. V. 109, 117, 129
 Dabek, J. 183
 Dabosi, F. 5, 17
 Danielewski, M. 183
 Danielson, M. J. 899
 Davenport, A. J. 41
 Dawson, J. L. 461, 479
 de Becdelievre, A. M. 279
 de Souza, L. M. M. 109, 117, 129
 de Wit, J. H. W. 1511
 De, P. K. 51
 Defourny, J. 1923
 Deslouis, C. 1567
 Devine, T. M. 2071
 Dey, A. K. 573
 Djoudjou, R. 1913
 Duffó, G. S. 79
 Dutta, R. S. 51

 El-Anadouli, B. E. 779
 Eriksson, P. 1083
 Esparza, P. 1531
 Exner, H. E. 1793, 1803

 Favre, M. 1481
 Feliu, S. 403, 415
 Feliu, S. Jr 403, 415
 Fernandes, J. C. S. 2105
 Ferrari, G. M. 1531
 Ferreira, M. G. S. 533
 Flitt, H. J. 1289
 Fréchette, É. 1259
 Fujikawa, H. 1157

 Gabe, D. R. 851
 Gadiyar, H. S. 51
 Galvele, J. R. 79, 1411
 Gamboa-Aldeco, M. 759
 Génin, J.-M. R. 797, 2059
 Gerretsen, J. H. 1299
 Ghali, E. 1275
 Gibson, P. N. 1541
 Gil, A. 615
 Gnanamoorthy, J. B. 1275
 González, S. 1531
 Grabke, H. J. 547, 1647
 Gräsjo, L. 1035
 Gulbrandsen, E. 1423
 Gullman, J. 1083

 Habazaki, H. 27, 183, 201, 445, 599, 975, 1817, 1829, 1947
 Hackerman, N. 1787

- Haneef, S. J. 497, 511
 Hardie, D. 93
 Harris, A. W. 1017
 Hashimoto, K. 27, 183, 201, 445, 599, 975, 1817, 1829, 1947
 Herbelin, J.-M. 1123
 Hihara, L. H. 655, 1761
 Hoffmann, K. 1625
 Hofmann, U. 423
 Hollis, A. C. 821, 837
 Hope, G. A. 1289
 Hosseini, S. M. A. 1723
 Hoven, H. 615
 Huang, H. 61
 Hultquist, G. 1035
 Hutchinson, A. J. 1881

 Im, B.-M. 1829
 Inturi, R. B. 705, 1973, 1201
 Isaacs, H. S. 41, 525
 Itoh, M. 1441, 1453
 Ives, M. B. 1773

 Johansson, L.-G. 721, 1083
 Johnson, J. B. 233, 497, 511, 1055, 1881
 Jones, M. 511
 Jones, R. H. 899
 Joshi, P. S. 1367
 Juhl, A. D. 785
 Justo, M. J. 533

 Kaiser, H. 683
 Kawashima, A. 27, 201, 445, 599, 975, 1817, 1829, 1947
 Keddiam, M. 279
 Kendig, M. W. 41
 Kim, J. H. 27, 975, 1817, 1947
 Kindlein, Jr, W. 1243
 Knott, P. 711
 Kobayashi, K. 701, 1045, 1475, 1853, 2099
 Kokot, S. 1007
 Kondepudi, P. K. 1761
 Kraiem, J. 1715
 Kruger, J. 1311
 Kumagai, N. 1441, 1453
 Kwiatkowski, L. 2045

 Lafont, M. C. 1567
 Laguna, M. 1617
 Landolt, D. 1481
 Latanision, R. M. 655, 1697
 Lazzeri, A. 1685
 Le Xuan, Q. 1715
 Lee Ju-Tung 741
 Lemaitre, C. 1913
 Lenard, D. R. 871
 Leng, A. 1657
 Lengyel, B. 1147
 Leygraf, C. 1213
 Li Ming-qi 1403
 Lim, K. B. 1707
 Lin, S. H. 2045
 Lopez, E. E. 1251
 Lu, Q. 1035

 Lu, X. Y. 1343
 Lu, Y. C. 1773
 Lyon, S. B. 233, 1055

 Mackowski, J. M. 279
 Makar, G. L. 1311
 Mankowski, G. 17
 Mansfeld, F. 2045, 2105
 Marahusin, L. 1007
 Marcus, P. 1123
 Massiani, Y. 1685
 Mattogno, G. 989
 Mayanna, S. M. 563
 McAlpine, E. 1541
 McKean, W. C. 1869
 Mészáros, G. 1147
 Mészáros, L. 1147
 Ming Tingjiang 915
 Moores, J. G. 871
 Morales, J. 1531
 Morcillo, M. 403, 415
 Moser, E. M. 1111
 Mrowec, S. 183
 Müller, I. L. 1243
 Murphy, M. 1495

 Nart, F. C. 109, 117, 129
 Nasrazadani, S. 1355
 Nelson, J. C. 307
 Newman, R. C. 1551
 Nishihara, H. 391, 1937
 Nishimura, R. 1463, 1859
 Notter, I. M. 851

 Odnevall, I. 1213, 1231
 Olsen, A. 1423
 Oriani, R. A. 307
 Otero, E. 1581, 1595, 1617
 Otieno-Alego, V. 1289

 Pardo, A. 1617
 Pebere, N. 5, 1567
 Pérez, F. J. 1617
 Petit, M. C. 1187
 Pirnát, A. 1147
 Poggi, G. 989
 Potter, D. I. 1991, 2007
 Procter, R. P. M. 961
 Puiggali, M. 1187

 Qafsaoui, W. 17
 Quadackers, W. J. 615

 Raicheva, S. N. 343
 Ramamurthy, S. 1385
 Raman, A. 1355
 Reda, M. R. 163, 1899
 Refait, Ph. 797, 2059
 Reynders, B. 1647
 Rocchini, G. 583, 885, 2019, 2031
 Roy, N. 573
 Royuela, J. J. 1581, 1595

 Sáenz de Santa-María, M. 961

- Sage, P. 233
 Sage, P. W. 1055, 1881
 Saito, N. 391
 Sakakibara, M. 391, 1937
 Salmeron, M. 2071
 Salvarezza, R. 1531
 Sawaragi, Y. 1157
 Scharnweber, D. 363, 383
 Schilling, P. T. 1243
 Schmitz, B. 1923
 Schroeder, R. M. 1243
 Schüssler, A. 1793, 1803
 Schweinsberg, D. P. 1017, 1289
 Scully, J. C. 179, 357, 821, 837, 883, 1039,
 1565, 1743, 1753, 1933
 Seah, K. H. W. 1707, 1841
 Sekiya, H. 1453
 Sen, U. 1733
 Shaw, W. J. D. 61
 Sheshadri, B. S. 563
 Shida, Y. 1157
 Shimizu, K. 701, 1045, 1475, 1853, 2099
 Sieradzki, K. 1311
 Simbi, D. J. 1743
 Simonen, E. P. 899
 Singh Raman, R. K. 1275
 Singh, I. B. 1733
 Singh, V. B. 1723
 Smart, N. G. 759
 Sokolova, E. I. 343
 Song Shizhe 1607
 Stephan, T. 383
 Stratmann, M. 1625, 1647, 1657
 Subramanyam, N. C. 563
 Suter, T. 1111
 Svensson, J.-E. 721
 Szklarska-Smialowska, Z. 705, 1201, 1973
 Tafto, J. 1423
 Takahashi, T. 1441
 Tamada, A. 261
 Tamura, Y. 261
 Tang Jie-qing 1403
 Tang Zilong 1607
 Tanno, K. 1441, 1453
 Tebbal, S. 1787
 Teng Mao-Ying 1173
 Teoh, S. H. 1707
 Thieme, M. 1557
 Thieme, M. 363, 383
 Thompson, G. E. 233, 461, 479, 497, 511, 701,
 1045, 1055, 1475, 1853, 1881, 2099
 Touzet, M. 1187
 Tsai Ming-Chang 741
 Tsai Wen-Ta 741, 1647
 Turnbull, A. 921, 1751
 Valeriotte, E. M. 1957
 van Westing, E. P. M. 1511
 Venkateswaran, G. 1367
 Venkateswarlu, K. S. 1367
 Vilche, J. R. 151
 Visser, A. 1299
 Vollmer, D. P. 1251
 Vouagner, D. 279
 Vu Quang, K. 1715
 Wallura, E. 615
 Wang, K. 1343
 Wei Zhen-wei 1403
 Weil, K. G. 423
 Westdahl, M. 1231
 Wilde, B. E. 433
 Wilde, M. H. 433
 Wood, G. C. 233, 461, 479, 497, 511, 701,
 1045, 1055, 1475, 1853, 1881, 2099
 Wronkowska, A. A. 249
 Wronkowski, A. 249
 Wu, J. X. 1343
 Xu Naixin 915
 Xu, N. 461, 479
 Yang Iuan-Jou 1173
 Yoshioka, H. 27, 975, 1453
 You, D. 5, 1567
 Zhang Fu-sheng 1403
 Zhang, B.-P. 201, 599
 Zhang, P. Q. 1343
 Zhang, W. Q. 1343
 Zhang, X. G. 1957
 Zuo Yu 1697